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A FAST SERVICE CONCEPT UTILIZING A MODULAR FOOD FACILITY

BY
BRIAN M. HILL
MICHAEL OSTROWSKY
JANE B. AHERN
GEORGE TURK

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UNITED STATES ARMY NATICK
RESEARCH & DEVELOPMENT LABORATORIES
NATICK, MASSACHUSETTS 01760

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FAST FOOD SERVICE		MENU(S)

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This report contains an evaluation of a fast service food system designed and implemented at Ft Ord, CA. This concept utilized a new modular facility as a supplement to an existing facility. This facility featured fast service, take-out meals and offered extended meal hours. Results from this evaluation indicate the high degree of success achieved through the use of this concept. Participation rates increased 37% to a rate of 58% in the new system. Service rates improved 60% to a rate of eight men per minute. Also, more customers chose to eat at the modular facility instead of the dining facility at both lunch and dinner. Finally, 84%

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of all customers surveyed stated that the modular facility had improved the foodservice system. In conclusion, it is recommended that this modular fast service facility be given serious consideration for those areas where large concentrations of personnel are present with limited or no foodservice available, such as airfields.

EXECUTIVE SUMMARY

Background

During FY81, the Operations Research and System Analysis Office (ORSAO) of the US Army Natick Research and Development Laboratories (NLABS) installed and evaluated two new fast service systems: one at Fort Devens and one at Fort Ord. This report details the evaluation of the Fort Ord Modular Fast Service Facility.

In the approach at Fort Devens a short order line in an existing dining facility was modified to serve fast service foods. The evaluation of the Fort Devens' effort is contained in "A Fast Service Concept for Army Dining Facilities", NATICK/TR–82/035.

Objectives

Increased enlisted meal participation rates, reduced waiting lines and improved customer satisfaction with the total foodservice system were the objectives for both of these evaluations. The key features of the new concept are:

- **Limited Menu Choices** to expedite customer service rates.
- **High Preference Fast Foods** to create customer satisfaction.
- **Pre-Packaged Food Selections** to improve service rates and facilitate progressive cooking.
- **Take-Out Service** to promote increased customer demand.
- **Extended Meal Hours** to attract new customers.

New System

Furnished with high production state-of-the-art equipment and configured to expedite customer flow, the modular fast service facility was designed to provide customer service with minimum reliance upon the adjacent dining facility. By offering high preference fast foods as an alternative to both the A-ration and short order meals served in the dining facility, congestion and long lines at the dining facility were eliminated. Also, this type of popular foodservice when offered as an alternative to traditional foodservice attracted new customers that did not fully utilize the foodservice system.

Customers could select one main entree and beverage of their choice. As at Fort Devens, cheeseburgers at lunch, and fried chicken at both dinner and the extended evening meal period were served daily. Potato chips, salad and a dessert were also given to everyone. At each of these meal periods, one other sandwich selection was featured as an alternative to the main entree.

After signing in, customers stated what entree and beverage they wanted. The person manning the sign-in station then gave the customers the beverage selected. At this point,

customers moved to the next window to pick up their prebagged entree. Customers then either returned to their barracks to eat or ate in their cars.

The costs of fast service meals are well within the 40% Basic Daily Food Allowance (BDFA) for lunch and dinner. Examining the food cost associated with Fort Ord's two most popular selections illustrates this point. A cheeseburger meal has a food cost of $0.96 or 27% of the BDFA while a fried chicken dinner costs $1.24 or 35% of the BDFA.

The cost of disposables associated with a sandwich meal is $0.09 per person and $0.13 per person for a fried chicken dinner. These costs are easily absorbed by KP contract savings. Services formerly required within the dining facility are reduced or eliminated with take-out and pre-packaging features.

Funding for the purchase and installation of the modular facility was provided by the Troop Support Agency. The contract award bid of $99,419 can be broken into three distinct categories: construction ($67,866), shipping ($4,500), and site preparation ($27,053). The modular facility utilized a borrowed portable refrigerator and freezer, which if purchased ($10,900) would have increased the total purchase system cost of the modular facility to $110,319.

Results

All objectives of the Fort Ord evaluation were achieved. Meal participation rates by enlisted personnel significantly increased to an overall percentage of 58%. This increase represents a 38% relative improvement over the 42% meal participation rate exhibited in the pre-test period. Waiting lines at the dining facility have been dramatically reduced as 75% of lunch and 60% of dinner customers selected to eat at the fast service facility. Customer service rates at the modular facility, which are 60% higher than the dining facility, have reduced the waiting time in line by patrons. Customer satisfaction after implementation of the fast service concept increased as well. Eighty-four percent (84%) of all customers surveyed stated that the modular fast service facility had improved the total foodservice system.

The issue of unauthorized meal consumption was addressed. An 8.7% per day increase over the old system was measured. However, those customers who on any one day ate more than three meals averaged only 2.3 meals per day when the analysis took into account the entire two-week data collection period.

Daily attendance increased by 735 persons on the average. If these customers had eaten in the dining facility, an additional $510 per day would have been added to the KP contract, since the KP contractor received $0.69 per person per meal for each signature on the dining facility headcount sheet. Savings resulting from the use of the modular facility can therefore be used to defray disposable expenses, and still provide a net savings to the base foodservice system of $9440 per 30-day month.

Conclusions and Recommendations

The modular fast service facility is a viable alternative to the regular short order service provided within dining facilities. When comparisons of the Fort Ord modular facility to the modification of the Fort Devens short order line are made, the most cost-effective option is to renovate existing dining facilities. However, we recommend that the modular facility be given due consideration for those areas where large concentrations of personnel are present with limited or no foodservice available, such as airfields.

It is further recommended that the take-out and extended hour features be stressed in future fast service operations. These two aspects of the concept are key elements that can significantly contribute to greater overall customer satisfaction and attendance. Finally, it is also recommended that the Quartermaster School develop fast service curricula for inclusion into its training program for foodservice management and cooks, and that a suitable manual be prepared for use by those who cannot attend or take a QM course.

With regard to the fast service concept, the results of this evaluation as well as the Fort Devens evaluation have demonstrated that it meets the needs of the enlisted soldier. Therefore, the recommendation of this evaluation is that Army foodservice should immediately begin to incorporate fast service into its dining facilities.

PREFACE

During FY81, the Operations Research and Systems Analysis Office (ORSAO) of the US Army Natick Research and Development Laboratories (NLABS) installed and evaluated a new fast service system at Fort Ord, CA. This O&MA military service requirement was conducted under Production Engineering in Support of the DoD Food Program P728012.19. To accomplish this work required the cooperative effort of many individuals. Specifically, the authors would like to thank members of the following organizations:

- **Fort Ord, CA**

Mr. Lawson Cooke, Chief, Transportation and Services Division, and CWO4 Joseph Fierros, Food Service Officer, Fort Ord, were instrumental in monitoring the installation of the modular facility. In addition, their support and cooperation in expediting purchases of food and services, and their invaluable efforts in obtaining and coordinating the assistance of various Fort Ord elements for this project are gratefully acknowledged. SFC Larry C. Cooke and SFC Victor G. Gomez were also of considerable help during the evaluation.

- **7th Infantry Division Artillery (DivArty), Fort Ord**

The smooth transition of the Modular Fast Service Facility into the existing Foodservice System was accomplished through the considerable cooperation and support of MSG Kelley and SFC Myers. CWO1 Rainey also helped the evaluation team.

- **Troop Support Agency, Fort Lee, VA**

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- **US Army Natick Research and Development Laboratories, Natick, MA**

– **Science and Advanced Technology Laboratory**

The customer evaluation section was written by Mrs. Barbara Bell in cooperation with Dr. Gerard J. Smits. Their assistance is greatly appreciated. In his capacity as Head, Behavioral Sciences Division, Dr. Herbert L. Meiselman reviewed and edited the customer evaluation portion of this report.

– **Audio Visual Branch/Visual Aid and Photography Sections**

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— Operations Research and Systems Analysis Office

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Mr. Harry J. Kirejczyk and Mr. Paul M. Short drafted the layout of the modular facility during the early stages of this project. Ms. Deborah Brooke assisted by Mrs. Diane Sears provided secretarial support. Finally, we would like to thank Mr. Philip Brandler, Chief, Operations Research and Systems Analysis Office, who has continued to support our work on this new fast service concept and who reviewed and edited this report.

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SECTION I

INTRODUCTION

Background

During FY80 and FY81, ORSAO designed two systems to address the problem of low enlisted meal participation rates at the dining facilities. This report details the evaluation of one of these concepts. In this alternative, Fort Ord, CA, was provided with a freestanding modular fast service foodservice facility.* Furnished with high production state-of-the-art equipment and configured to expedite customer flow, the modular facility was placed in a high customer traffic area where an existing dining facility was exhibiting long waiting lines and times. Congestion at the dining facility was to be relieved by the modular facility through quicker service. In the other approach, an existing short order line in a dining facility at Fort Devens, MA, was modified to provide fast service foods. The analysis of that effort is contained in "A Fast Service Concept for Army Dining Facilities."[1]

Because both approaches utilized the same basic characteristics and guidelines, unnecessary repetition of the rationale behind the selection processes for various procedures and products will be minimized and the reader will be referred to those pertinent sections of the above mentioned report. Discussion of differences in the selection of food, disposable or equipment unique to Fort Ord will be presented.

While both concepts are similar in purpose, they are sufficiently different in design to call for separate evaluations. Fort Ord's modular facility will augment and enhance an existing dining facility's A-ration and short-order foodservice system through the addition of a fast service facility. Addition of a fast service line at Fort Devens, MA, is a modification to an existing foodservice system.

Objectives of this new concept were to:

- Increase Army enlisted meal participation rates.
- Reduce waiting times and lines.
- Increase customer satisfaction.

These objectives are mutually reinforcing. Through the reduction of meal lines, greater customer satisfaction will occur which will in turn generate higher meal attendance by those enlisted members entitled to a daily food allowance (authorized to subsist). The following characteristics served as guidelines in designing the modular facility.

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*Although the terminology "Fast Food" is routinely used in conjunction with commercial and military operations of a similar nature, "Fast Service" is a more appropriate description.

[1]B.M. Hill, J.B. Ahern, M. Ostrowsky, and G. Turk, "A Fast Service Concept for Army Dining Facilities," NATICK/TR–82/035, US Army Natick Research and Development Laboratories, 1982.

- LIMIT MENU SELECTION. Reducing the number of customer selections to manageable levels from the current excessive number of choices will expedite customer service rates.

- PROVIDE HIGH PREFERENCE FAST SERVICE FOODS. Serving only those food products which are consistently chosen by customers and which are commercially similar will create increased customer demand.

- PRE–PACKAGE FOOD ITEMS. Maintaining a small inventory of pre-packaged food selections in conjunction with progressive cookery will improve customer service rates while maintaining food quality.

- PROVIDE TAKE–OUT SERVICE. Allowing take-out service will enable the customer to obtain a meal with greater ease than the traditional meal service allows, therefore customers' perceptions of the foodservice system will be enhanced.

- EXTEND MEAL HOURS. Furnishing extended meal hours especially during the evening will bring back customers who found the typical meal hours incompatible with an active schedule.

Technical Approach

Concept Design. Potential customer attendance at the modular facility was estimated to set design parameters. From the estimate of meal participation, various operating characteristics could be determined.

1. Menu Design. Development of the fast service menu was consistent with the objectives for a limited, high preference take-out foodservice operation. Previous research and consumer preference evaluations were utilized in determining the menu mix.[2,3] Acceptability tests were conducted for those food products that had not been previously served. Because the modular unit would have limited preparation and holding capacity as well as being totally take-out, the menu varied slightly from that designed for Fort Devens.

2. Equipment Selection. Concurrent with the design layout, proposed equipment was reviewed for compatibility with fast service objectives and modular facility constraints. The selection process involved assessments of reliability, production, and holding capacities.

3. Design Layout. Based upon experience with modular facilities, the design phase set out to maximize customer flow. Because of space constraints, another extremely important consideration involved work center evaluations. Equipment must be located so that workers do not interfere with one another's work procedures and patterns.

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[2] R.P. Richardson, D.P. Leitch, B.M. Hill, P.M. Short, and G. Turk, "A New Foodservice System Concept for Aircraft Carriers," NATICK/TR–80/007, US Army Natick Research and Development Laboratories, 1979 (AD A083 630).

[3] G. Hertweck and R.L. Bustead, "Experimental Design of the Modular Fast Food Service Facility at Travis AFB," TR–75–34, OR/SAO, US Army Natick Research and Development Laboratories, Natick, MA, 1974 (AD A007124).

Systems Analysis

Systems Analysis. Detailed evaluations by NLABS' data collectors of both the pre-test system and post-test implementation of fast service were conducted.

1. Participation. Collection of meal card numbers at every meal during pre-test and test evaluation periods was carried out. Comparisons with the authorized attendance for both periods were made to find the change in overall participation.

2. Meal Attendance Patterns. Analyses of meal card numbers were undertaken to determine the actual number of meals eaten by those authorized to subsist before and after system implementation.

3. Customer Evaluations. Surveys by NLABS' behavioral scientists of enlisted personnel attitudes towards a variety of foodservice issues were conducted.

4. Food Acceptance. Face to face interviews with enlisted diners after they finished eating were conducted to determine actual food acceptance.

SECTION II

SYSTEM DESCRIPTION

Background

The Fort Ord modular fast service facility is designed to provide customer service with minimum reliance upon the adjacent dining facility. By offering high preference fast service foods as an alternative to both the A-ration and conventional short order meals served in the dining facility, congestion and long lines at the dining facility are avoided. This popular alternative to traditional foodservice will also attract new customers that currently do not fully utilize the foodservice system.

Fast Service Menu and Customer Service Procedures

Table 1 presents the menu that was used. Customers could select one main entree and one beverage of their choice. Cheeseburgers at lunch and fried chicken at both dinner and the extended evening meal period were served daily. Potato chips, salad, and a dessert were given to everyone. At each of these meal periods, one other sandwich selection was featured as an alternative to the main entree.

Beverages were canned soda, containers of milk, or fruit flavored juices. To expedite customer flow, beverages were pre-dispensed. In this manner, the server could easily hand out a beverage without having to individually dispense each drink. Space limitations within the modular unit were such that the addition of a carbonated beverage or milkshake dispenser, as at Fort Devens, was not compatible with the facility design. If these pieces of equipment had been included, an increase in the beverage holding capacity for pre-dispensed beverages would also have been required.

Another factor contributing to the selection of commercially packaged beverages involved the number of workers needed to efficiently operate the beverage service. Once again, limited space constrains the number of individuals that can efficiently work within the modular facility. If both milkshakes and carbonated beverages were pre-poured from modular facility equipment, then at least one extra cook or foodservice worker would have had to be assigned to the facility.

Potato chips were served instead of french fries to expedite line flow. Prior to a meal start-up, all take-out bags were prepared with a set of common components including potato chips, napkins, etc. By making these setups ahead of time, the server merely had to place the selected entree and dessert in a bag. This method enables the server to quickly give the customer his meal choice.

From a food preparation standpoint, potato chips were more compatible with the modular facility design than french fries. French fries presented several difficulties. First, because the fries cannot be held for more than 10 to 12 minutes without significant product degradation, cooking would have had to be done on the line with minimal storage to guarantee product

Table 1

Fast Service Menu

	Lunch	Dinner/Extended
Feature Items		
Day 1	Cheeseburgers Ham and Cheese Submarine Sandwich	Fried Chicken Burritos
Day 2	Cheeseburgers Roast Beef Submarine Sandwich	Fried Chicken 1/4 lb Cheesedog
Day 3	Cheeseburgers Corned Beef Sandwich	Fried Chicken Peppersteak Submarine Sandwich
Day 4	Cheeseburgers Chicken Fillet Sandwich	Fried Chicken Steak and Cheese Submarine Sandwich
Day 5	Cheeseburgers Salami and Cheese Submarine Sandwich	Fried Chicken Fishwich
Day 6	Cheeseburgers Tuna Submarine Sandwich	Fried Chicken 1/4 lb Chili Dog

Additional Items

Salad
Potato Chips
Dessert
Assorted Beverages
Condiments

acceptability. Secondly, the labor commitment required in this operation is not compatible with the modular concept. The fryman, in addition to cooking, would have had to bag fries which would conflict with his other food preparation tasks. During periods of peak demand, a cook or foodservice attendant would have been required to bag french fries. Thirdly, to efficiently bag french fries, sufficient space for a bagging station, including an area for prepared bulk french fries and french fry bag racks is necessary. This space was not available. After signing in, customers stated their desired entree and beverage. The person manning the sign-in station gave the customer the beverage selected before the customer moved to the next window to pick up his prebagged entree. In contrast to the fast service operation at Fort Devens, these meals were totally take-out, and customers ate in their cars or returned to their barracks to eat.

Although slight variations between the starting times for meals in the dining facility can be noted, the meal hours were virtually the same for both pre- and post-test periods. The modular facility increased meal service availability for the customer by four hours. The hours of operation for both the dining facility and modular unit are listed in Table 2.

Table 2

Hours of Operation

	Pre-Evaluation Dining Facility Time	Post-Evaluation Dining Facility Time	Post-Evaluation Modular Facility Time
• Weekday			
Breakfast	0715–0845	0600–0800	NA
Lunch	1215–1315	1230–1330	1200–1330
Dinner	1700–1830	1700–1830	1700–1830
Extended	NA	NA	1830–2200
• Weekend			
–Saturday			
Breakfast	0700–0930	0700–0930	NA
Lunch	1300–1430	1300–1430	1200–1330
Dinner	1530–1700	1530–1700	1700–1830
Extended	NA	NA	1830–2200
–Sunday			
Breakfast	0800–0930	0800–0930	NA
Lunch	1300–1430	1300–1430	1200–1330
Dinner	1530–1700	1530–1700	1700–1830
Extended	NA	NA	1830–2200

An important element of this new system is the extended hour concept. Extended hours refer to those periods when there is customer demand but no regular meal service is provided. Primarily, this service was designed for evening feeding after the dining facility had closed, when many soldiers had difficulty obtaining a dinner meal if they participated in afterwork activities such as sports. In addition, the modular facility opened for lunch one half-hour earlier than the dining facility. A large customer population was identified as available for a meal during that period. Instead of having these customers stand in line waiting for the meal to begin, the modular facility opened at 1200. If dining facilities do not provide meals when there is a customer demand, these customers will go elsewhere, which will be reflected in low rates of meal participation.

Food Products

To attract and bring back those customers who were going off post to eat, food selections that were identifiable and comparable to commercial fast food restaurants were required. In selecting the menu, the Federal Supply Catalog, Group 89, subsistence stock list was utilized as the principal source for all food products. Only one totally new sandwich product, a four-ounce chicken fillet, was introduced. This item was reviewed by the Armed Forces Product Evaluation Committee (AFPEC) and has been accepted for inclusion in the subsistence system. A detailed sensory evaluation by a technical taste panel can be found in the Fort Devens Report.[4]

Table 3 contains the food products that are the primary components of the fast service system. While these items are found in the Group 89 catalog, they may not have been part of the previous demand structure that the local Troop Issue Support Agency (TISA) uses to establish its inventory levels. It is essential that, before the start up of any new fast service operation, careful coordination with the TISA is accomplished to determine and set initial inventory requirements.

Table 3

Primary Fast Service Products

	Portion	Stock No.
Chicken Breast Fillet	4 oz	New Product
Fried Chicken	10 oz 3 pcs	8905–00–079–2796
Beefburger	4 oz	8905–01–060–8212

[4]See Footnote 1.

Food Cost

The Basic Daily Food Allowance (BDFA) required that the cost structure of the fast service menu be carefully analyzed to insure that the dining facility manager could operate within existing food cost tolerances. Although menus were similar for both fast service alternatives, minor differences with locally purchased products resulted in different meal costs.

Table 4 presents the cost of providing Fort Ord's two most popular selections. These meals are well within the 40% BDFA meal allowance for lunch and dinner meal periods. Meal costs at Fort Ord are relatively fixed in nature because of its totally take-out service and bag of common food components, in contrast to the Fort Devens situation in which meal costs vary depending on whether the meal is eaten in or taken out. One significant source of difference in the meal costs between Fort Ord and Fort Devens is the salad bar at Fort Devens. Utilization of the salad bar can add $0.13 to the per person meal cost. Table 5 compares Fort Ord and Fort Devens meal costs. Similar items may not be priced the same because of local purchase cost variations for roll items in particular.

Added costs from waste can occur in both alternatives if management allows overproduction of food in anticipation of demand. Stockpiling of prepackaged foods is a distinct possibility that the Food Service Sergeant must carefully monitor and correct if necessary. After assembly of an amount of food only sufficient to meet initial line demands, **progressive cookery must be adhered to.** At Fort Ord, dining facility management stressed and enforced proper procedures which resulted in excellent cost controls and customer satisfaction.

Food Packaging and Presentation

At Fort Ord and Fort Devens, the mechanism for eliminating slowdowns was to modify the already proven packaging procedures used on aircraft carrier fast service lines. The serving methods chosen

- are compatible with the individual products served in terms of appearance, heat retention, and product protection during serving.
- enable simple wrapping and serving procedures.
- are similar to commercial serving and merchandising applications.
- minimize funding requirements consistent with the above criteria.

Consideration was given to a wide variety of packaging mediums including paper, foil, and foam products (see Table 6).

Determination of the take-out packaging costs associated with the modular fast foodservice at Fort Ord is considerably easier than at Fort Devens where diners could also eat in the facility and for which take-out packaging would be a needless cost. Take-out service was the only option available to the diner at Fort Ord's modular facility, and all applicable meal

Table 4

The Meal Cost of Fort Ord's Two Most Popular Menu Selections

	Portion Size oz	Servings #	Unit Cost $	BDFA Percentage %
Cheeseburger Meal				
Cheeseburger	4.0	1	$0.46	13.0%
Potato Chips	0.5	1	.06	1.7
Cole Slaw	3.5	1	.04	1.1
Fruit Turnover	3.0	1	.11	3.1
Soda	12.0	1	.19	5.4
Condiments, Assorted			.10	2.8
Total			$0.96	27.1%
Fried Chicken Dinner				
Fried Chicken	10.0	1	$0.74	20.9%
Parker House Rolls	3.0	1	.08	2.3
Potato Chips	0.5	1	.06	1.7
Cole Slaw	3.5	1	.04	1.1
Fruit Turnover	3.0	1	.11	3.1
Soda	12.0	1	.19	5.4
Condiments, Assorted			.02	0.6
Total			$ 1.24	35.1%

BDFA = $3.54

Table 5

A Food Cost Comparison Between Fort Ord and Fort Devens

Menu Component *		Food Cost		Meal Cost Differential
Ft Ord	Ft Devens	Ft Ord	Ft Devens	(Ft Ord minus Ft Devens)
		$	$	$
• Cheeseburger Meal				
Cheeseburger	Cheeseburger	0.46	0.48	–0.02
Potato Chips	French Fries	.06	.07	–0.01
Soda	Milkshake	.19	.22	–0.03
Fruit Turnover	Fruit Turnover	.11	.13	–0.02
Total				–0.08
Cole Slaw	Salad Bar	.04	.13	–0.09
Total Meal Cost Difference				–0.17
• Fried Chicken Dinner				
Fried Chicken	Fried Chicken	0.74	0.68	+0.06
Potato Chips	French Fries	.06	.07	–0.01
Soda	Milkshake	.19	.22	–0.03
Parker House Rolls		.08	NA	+0.08
Total				+0.10
Cole Slaw	Salad Bar	.04	.13	–0.09
Total Meal Cost Difference				+0.01

* Unlisted menu items have the same food cost at both sites.

Table 6

Serviceware Systems Specifications for the Fort Ord Modular Facility

	Company	Description	Product ID No.	Quantity	Cost/Case $	Cost/Unit $
• Sandwiches						
Beefburger Wrap	Bag Craft Corp	12" x 12"	395	6000	$48.60	$0.008
Cheeseburger Wrap	Bag Craft Corp	12" x 12"	396	6000	$48.60	.008
Chicken Sandwich Wrap	Bag Craft Corp	12" x 12"	397	6000	$48.60	.008
Submarine Sandwich	Bag Craft Corp	12" x 16"	373	4000	$38.40	.010
Special Sandwich Wrap	Bag Craft Corp	12" x 12"	397	6000	$48.60	.008
• Fried Chicken						
Foil Bag, Heat Retentive	Bag Craft Corp	4" x 3" x 10–1/2"	480	1000	$44.00	.044
• Salads						
Plastic Container	Sweetheart	8 oz	EC 855	500	$17.10	.034
Plastic Lid	Sweetheart		LC 410	500	$12.18	.024
• Cole Slaw						
Plastic Container	Sweetheart	3–1/2 oz	S 10	1000	$19.46	.019
Plastic Lid	Sweetheart		LS 10	1000	$9.95	.010
• Desserts						
Plastic Container	Sweetheart	3–1/2 oz	S 10	1000	$19.46	.019
Plastic Lid	Sweetheart		LS 10	1000	$9.95	.010
Fruit Pie Waxbag	Bag Craft Corp	Sleeve	467	4000	$31.60	.008
• Carry-out Container						
Paper Bag, White	Local Purchase	12 lb		1000	$26.95	.027

components were prepackaged for ease of service. Table 6 contains pertinent information concerning fast service disposable product specifications. While not every disposable product used in the Fort Devens evaluation applied to Fort Ord's operation, consumable products that did apply are exactly the same in both cases. However, some cost differences are to be noted. As in the case of some of the food products, these variances in price reflect local purchase differentials of about $0.001 per unit.

The disposable cost associated with a sandwich meal is $0.09 per person and $0.126 for a fried chicken dinner (Table 7). While the unit costs of disposables are extremely close at both Fort Ord and Fort Devens, the net cost of take-out service at the two bases was different. At Fort Devens, the cost of consumables used in the take-out option ranged between $0.05 and $0.10 above Fort Ord's cost due to the use at Fort Devens of french fry bags and beverage containers.

Table 7

Consumable Cost by Type of Meal

	Sandwich Meal	Fried Chicken Dinner
Sandwich Wrap	$0.008	
Foil Bag		$0.044
Salad Container	0.029	0.029
Turnover Bag	0.008	0.008
Plastic Utensil	0.016	0.016
Napkin	0.002	0.002
Paper Bag	0.027	0.027
Total Cost	$0.090	$0.126

Staffing Requirements

Because of space constraints the number of personnel working in the modular facility must be minimal. The modular facility was designed to increase worker efficiency through detailed analysis of foodservice procedures and work center evaluation. Food preparation areas were located in the back half of the modular facility. Finished products flowed from production areas toward the front holding and service areas. Transfer of all food products and disposable items was completed prior to the beginning of the meal period. All refrigerated sandwiches, salads, and desserts were prepared and packaged during off-peak hours. In this manner, workers needed only to concentrate on progressive cookery and customer service during the meal. By efficiently scheduling preparation of those foods capable of pre-preparation and packaging, maximum productivity during meal hours was obtained.

Table 8 summarizes the staffing guidelines that were needed at Fort Ord. With this staffing, a minimum of six men per minute for a 1—1/2-hour meal period could be serviced using the foodservice procedures outlined. If more than the potential 540 customers were to be served, additional labor would be necessary to assist in cooking and assembly.

Table 8

Modular Facility Peak Demand Personnel Requirements*

Task	No. Required	Function
Supervisor	1	Supervises, monitors headcount, dispenses beverages.
Food Preparation	2	Maintains progressive cookery of fried and grilled products.
Serving Window	1	Dispenses prepackaged food selections, assists in preparation when required.
Food Service Attendants	2—3	Transfers food products, assists window server, cleaning as required.

*The number of personnel required to achieve a minimum service rate of six men per minute during a 1—1/2-hour meal period.

Supervision — staffing requirement. An E-6 or a well qualified E-5 should be in charge of the fast service. While this type of food preparation does not call for a great deal of skill, there is an increased need for management's participation. Because food is not to be prepared in bulk but only in small, limited quantities ahead of time, the supervisor has to insure that food preparation procedures and holding methods are being adhered to. With prepackaging it becomes very easy to cook all food prior to the meal's start. This must not be done. A supervisor must have a sufficient quantity to meet the initial line surge and not more. Progressive cookery must be utilized to insure product quality.

With the beginning of meal service, the supervisor moved to the sign-in station to monitor meal cards and dispense beverages. Initially, it was uncertain whether sufficient space was available to allow for a separate non-cook headcounter. Evaluation of the operation indicates that a separate non-cook headcounter can be stationed within the modular. By removing the headcount function from the supervisor, he is free to assist others and manage the operation in a more efficient manner.

Food Preparation and Service — staffing requirement. The functions encompassed in these operations include preparation of all ingredients required, assembly and packaging of all cold sandwiches and salads, premeal setup of the serving area, and fry and grill operations on

a progressive cookery basis. The supervisor assigns and assists these individuals to insure that the correct amount of food products is available for meal operation. During meal service, one cook is capable of maintaining progressive cookery of both fried and grilled foods. The other cook is stationed at the serving window.

Foodservice Attendant (KP). Foodservice attendant functions are to transfer all food products to the modular from the main storage areas, to assist as directed in the packaging of foods, and to clean the facility.

The transfer of food to the modular prior to the meal is an extremely important function. Because of the limited storage space, sufficient quantities of key ingredients must be on hand during a meal in order not to compromise the efficiency of the operation.

Assembly and packaging of sandwiches and salad items is a simple task performed by KP's under the direction of cooks. One of the key functions of this job is to have the foodservice attendant prepackage a sufficient number of the large take-out bags with a set of common selections.

Those KP cleaning functions that were developed at Fort Ord are listed in the supplemental KP contract drawn up for a modular fast service facility included as Appendix A. A difficulty that arose during the evaluation involved an underestimate of the cleaning time involved in setting up and closing. Initially, one hour daily had been allotted to both these tasks which turned out to be insufficient. Startup operations called for two persons beginning 1–1/2 hours before the meal. At the end of the day, one person could clean the facility in a 1–1/2-hour period if cleaning throughout the meal had been carried out. If at the end of the day cleaning was not performed adequately, start-up operations the next day were compromised, as cleaning had to be performed prior to beginning the day's operation.

Facility Design

A layout drawing of the modular fast service facility is presented in Figure 1. Equipment selected is listed in Table 9. The modular unit was designed as a compact self-contained foodservice facility with dimensions of 24' (long) x 10' (wide) x 12' (high) including the exhaust fan. Construction of the modular shell consisted of a base totally enclosed by steel frame sides except for doors and windows. The roof line of the facility was of a mansard style. Provision for all applicable utilities was made so that external connections were at the rear of the unit.

The Troop Support Agency (TSA) has been provided with the detailed purchase description and drawings, therefore an in-depth discussion of these issues will not be presented. For those readers requiring more detail, TSA should be contacted. Those major pieces of equipment used in the modular facility are listed in Appendix B. Recommendations concerning future purchases of modular facilities are contained in Appendix C.

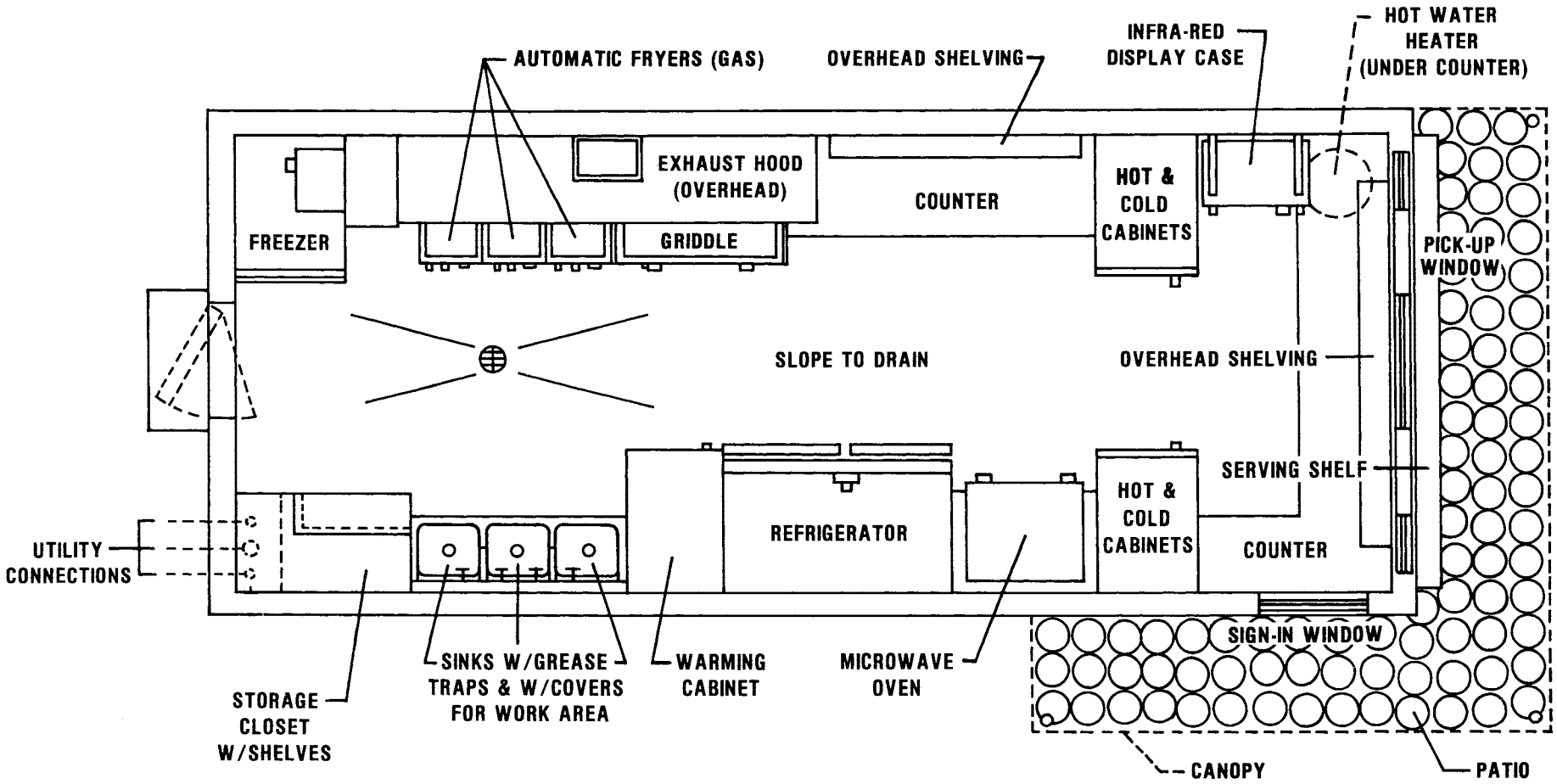

FIGURE 1: FORT ORD MODULAR FAST SERVICE FACILITY

Table 9

Food Service Equipment – Fast Service Modular Facility

Ft Ord – CA

No.	Item	Manufacturer	Model No.	Quantity (total)	Unit Cost ($)	NSN	Specification Federal, Military, Commercial
1	Cabinet, Warming	Crescent Metal Products, Inc.	H–137–CDD–UR–12	1	$1,205	NA	W–C–20
2	Cabinet, Food (Hot & Cold)	Crescent Metal Products, Inc.					
	a. Hot Unit		H–339–128	2	565	NA	Commercial
	b. Cold Unit		309–128	2	485	NA	Commercial
3	Food Warmer Infra-Red	Crescent Metal Products, Inc.	H–831–24–2	1	580	NA	Commercial
4	Freezer, Upright, Reach-In Self-Contained, Stainless Steel	Traulsen & Co., Inc.	RLT–1–32–W–UT	1	3,910	4110–01–024–8990	MIL–F–43408–Grade A, 20 cu. ft.
5	Refrigerator, Upright, Reach-In, Self-Contained, Stainless Steel, (4 one-half-size doors)	Traulsen & Co., Inc.	RHT–2–32–N–UT	1	4,500	4110–01–007–8152	AA–R–200–Type H, Size 20, cu. ft. (min) Style 1, w/legs
6	Fryers, Deep-Fat	The Frymaster Corp.	MJ–35	3	1,330	7310–01–006–4452	S–F–700–Type I, Size 4 Model-A, Grade A, Class 1
7	Griddle, Gas	Keating of Chicago, Inc.	Miraclean – Size 48	1	1,475	NA	MIL–G–2239–mira-clean surface 160,000 BTLC
8	Microwave Oven	Litton Industries	70/80	1	1,950	NA	S–O–1425–Type II, Size 1200, Group 1, Class 2, Style 3

Table 9 (cont'd)

Food Service Equipment – Fast Service Modular Facility

Ft Ord – CA

No.	Item	Manufacturer	Model No.	Quantity (total)	Unit Cost ($)	NSN	Specification Federal, Military, Commercial
9	Sink, 3-Compartment w/covers to convert to work area	Metal Masters, Inc.	1848–3	1	$ 300	NA	Commercial
10	Refrigerator, Portable Walk-In Type (box only)		150 cu. ft. capacity	1	4,080	4110–00–057–0325	MIL–R–12571
11	Freezer, Portable Walk-In Type (box only)		150 cu. ft. capacity	1	4,080	4110–00–057–0325	MIL–R–12571
12	Refrigeration Unit Electric Motor Driven		Air Cooled	2	1,070	4110–00–057–0322	MIL–R–12574–Type II

Facility Cost

Funding for purchase and installation of the modular fast service facility was provided by the Troop Support Agency in the amount of $100,000. Table 10 provides a schedule of the costs incurred. The contract award bid for furnishing and installing the modular facility was $99,419.

Table 10

System Cost of the Fast Service Modular Facility

Cost Estimate	
Manufacturer's Price	$ 67,866
Transportation Expense	4,500
Prime Contractor's Charge	27,053
Total Cost of Installed Facility	$ 99,419
Add: Cost of Loaned Equipment and Site Preparation for said equipment	10,900
Total System Cost	$110,319

Although the contract price does not itemize specific costs, we have been able to identify three primary expenses: construction, shipping and site preparation. Construction and shipping costs were provided by the modular facility's manufacturer. The manufacturer's price for the modular facility was $67,866, while the cost to transport the finished product was $4,500. The total cost of the modular facility at this point was $72,366.

An on-site contractor, termed the Prime Contractor, had been awarded the contract to furnish and install the modular unit. Installation consisted of site preparation, foundation work, utility hook-ups, and pre-acceptance testing. Including some minor contract modifications, the total award cost amounted to $99,419. By deducting the manufacturers price and shipping cost, a sum of $27,053 was estimated as the Prime Contractor's charge.

The modular facility utilized a portable refrigerator and freezer as part of the fast service system. This equipment has not been included in the cost of the fast service system because it was on loan to Fort Ord. However, the importance of this refrigeration equipment to the efficient operation of the fast service system requires that the cost associated with purchase and installation of similar items be included in the overall systems cost. Table 10 shows that the total cost of these items would result in an additional $10,900 being added to the overall system cost. The inclusion of this necessary refrigeration would bring the total cost of the fast service modular facility to $110,319.

SECTION III

ANALYSIS OF RESULTS

Participation Rates

One measure of success for the new modular fast service facility was increased enlisted meal participation. As in the Fort Devens test, the participation rate was derived by the following calculation:

$$\text{Dining Facility Participation Rate} = \frac{\text{Total number of authorized meals served}}{\text{Total number of individuals authorized to subsist}}$$

The number of meals served was obtained by having NLABS data collectors record the meal card numbers of each authorized customer in the dining facility at each meal. The number of individuals authorized to subsist was obtained from the Division Artillery (DivArty) Personnel Administration Center (PAC).

Pre-test data (ORD–1) was collected for two weeks in September 1980 while test data (ORD–2) was collected for a similar two week period in September 1981. The dining facility in the pre-fast service system operated with an A-ration and a short-order meal choice. With the addition of the modular facility to the foodservice system, the customer now had the additional choice of a fast service, take-out meal. Participation rates for ORD–1 and ORD–2 are presented in Table 11. These rates indicate that a statistically significant relative increase (at the 0.05 level) of 37% at ORD–2 has been achieved resulting in an actual attendance rate of 58%. Weekday figures were slightly higher with an actual 62% participation rate in ORD–2.

Table 11

Meal Rate of Participation

	ORD–1	ORD–2	Relative Improvement
Weekday	45.2	62.1	37.4
Weekend	35.1	46.9	33.6
Total	42.3	57.8	36.6

Besides the overall popularity of fast service, the success of the Fort Ord modular facility evaluation can be directly attributed to a number of specific factors. The support from the foodservice staff allowed the evaluation to proceed as planned without interference. Meal hours remained constant throughout the evaluation including the extended hour period, which continuously provided service until 2200 hours. Also, the availability of a fast service, take-out meal proved to be a popular addition to the foodservice system. This allowed the soldier to obtain a complete meal without a long wait in line.

Service Rates

An important improvement provided by the new modular fast service facility was the increase in the rate at which customers were served. The modular facility was set up to provide the customers a fast service, take-out meal in a bag without waiting in long lines. During peak meal periods when a line was present, the number of customers served was approximately eight per minute. This meant that soldiers arriving to eat at the modular unit had a relatively short wait in line before being served. These service rates were recorded during the first half-hour of each meal, when the demand was greatest.

Service rates were also recorded in the dining facility on the A-ration line. The maximum number of customers served was six per minute. This rate was also recorded during peak meal periods with a line present. The serving rate at the modular facility was therefore 33% higher than in the dining facility.

Serving Line Selection Patterns

During ORD–1, the dining facility was the only eating establishment available for the DivArty meal card holders. This facility served both full and short order meals. However, with the addition of a freestanding, modular foodservice facility located adjacent to the dining facility, the customer now had a third meal choice. The modular unit proved to be extremely popular with the troops. Table 12 presents meal selection patterns at lunch and dinner by serving line and dining location. The modular unit was not open for breakfast.

Table 12

Customer Utilization of Foodservice Facilities

	ORD–1		ORD–2		
	Lunch %	Dinner %	Lunch %	Dinner %	Extended %
Dining Facility	100	100	25	40	N/A
Fast Service Facility	N/A	N/A	75	60	100
Line Selection Within Dining Facility					
A–Ration	60	56	91	93	
Short Order*	40	44	9	7	

*The drop in ORD–2 short order utilization is attributable to customers now selecting fast service meals.

As indicated in Table 12, three out of every four customers (75%) eating lunch in the DivArty area chose to eat in the modular facility instead of the mess hall. At dinner the difference in selection patterns was not as large; however, the modular unit still attracted more customers than the dining facility by a three-to-two margin (60% to 40%).

A major factor contributing to the popularity of this new modular fast service unit was the take-out option, which was not available in the dining facility. This service provided the soldier the opportunity to obtain a complete meal and go about his business.

In addition to monitoring selection patterns, data were collected within the dining facility comparing attendance on the A-ration line to the conventional short order line. With the addition of the modular facility to the foodservice system, the short order line in the dining facility served a reduced number of customers (Table 12). Roughly 9% of those customers eating lunch in the dining facility chose short order as opposed to A-rations during ORD–2. At dinner, the short order meal percentage was even lower at 7%. This decline in short order customers from ORD–1 can be directly attributed to the addition of the new fast service facility.

More than 50% of all customers eating lunch at the modular facility did so during the 1200–1230 period, that is, prior to the 1230 opening of the standard dining facility. This factor should be taken into consideration when comparing the ratio of customers eating lunch in the modular unit with the dining facility. Opening at the earlier time was directly related to the extended hour concept. A significant customer demand was identified at this period and service was provided. The setting of meal hours based upon traditional times is an incorrect foodservice procedure. Foodservice management should be aware of its customers' needs and move to fulfill these needs.

Extended Evening Meal Hours

Extended evening meal hour service was available to provide the customer an opportunity to obtain an evening meal after the regular dinnner hours. The modular unit was open during this period from 1830 to 2200 hours. Table 13 compares meal attendance in the ORD–1 and

Table 13

Percent of Authorized Attendance by Meal

	ORD–1	ORD–2
	%	%
Breakfast	15	14
Lunch	14	17
Dinner	13	14
Extended Hours	–	13
Total	42%	58%

ORD–2 evaluation periods. While breakfast, lunch, and dinner attendance rates were similar for both ORD–1 and ORD–2, the extended evening meal hours accounted for greater than 22% of the overall participation rate and indicated that there was a legitimate need for evening hours beyond the regular dining hours.

Arrival patterns in the extended period were monitored. An analysis of arrivals by half-hour intervals illustrates that there was a relatively steady demand throughout the period, but the 2000–2130 period served the highest number of customers, as seen in Figure 2.

Extended hours contributed significantly to the overall increase in participation rates during ORD–2. Thirteen percent of the daily authorized customer total participated in the extended hours operation and this ORD–2 extended hour participation rate equalled the ORD–1 dinner participation rate. (Note Table 13). These results confirm that additional hours are needed in the evening to accommodate the needs of a large number of troops.

Meal Attendance Patterns

The effect the new fast service system had on meal attendance patterns was analyzed for both the pre- test (ORD–1) and test (ORD–2) periods. Meal attendance patterns are the measure of the frequency with which SIK personnel obtained meals from the dining facility and were determined by calculating the percentage of authorized (SIK) personnel on duty consuming zero, one, two, three, or more than three meals per day in the dining facility.

The percentages derived from the daily data collection were averaged to obtain overall percentages in each meal category (0,1,2,3 or more than 3). These categories are all-inclusive and account for all of the authorized personnel on any given day, including those personnel not consuming any meals at the dining facility.

Differences between the ORD–1 and ORD–2 meal attendance patterns were compared by statistical analyses to determine if significant changes at the 0.05 level had occurred. A two-tailed test for the difference between proportions was used. A discussion of these analyses follows. Table 14 presents the relevant data for the five categories of eating patterns defined above.

Table 14

Comparison of Overall Meal Attendance Patterns

Meals/Day	Before %	After %	Change In Percent %
0	34.6	24.7	–9.9
1	22.3	20.3	–2.0
2	25.5	24.1	–1.4
3	17.0	21.7	+4.7
>3	0.5	9.2	+8.7

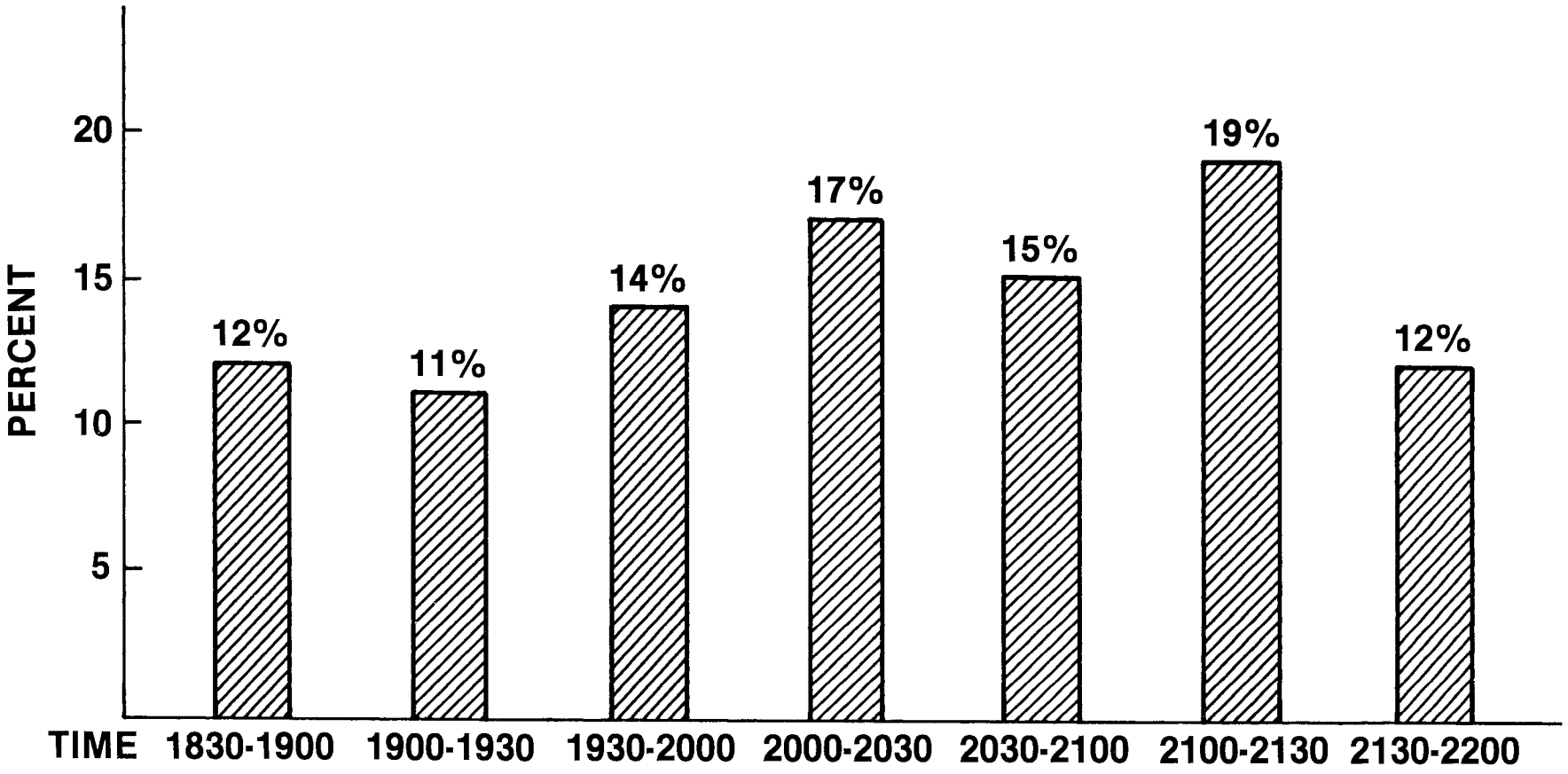

FIGURE 2: FORT ORD EXTENDED HOURS PERCENT PARTICIPATION BY HALF-HOUR INTERVALS

a. **Zero Meals.** The percentage of authorized personnel not eating in the dining facility decreased from 34.6% during ORD–1 to 24.7% during ORD–2. The 9.9% decrease was statistically significant at the 0.05 level. Those customers not consuming meals on any given day were further analyzed to determine whether this represented a consistent pattern. Analysis of this group determined that 9.9% of the authorized customers during ORD–1 and 1.8% in ORD–2 did not obtain any meals from the dining facility at any time. The 8.0% decrease in this category indicates that some customers who never obtained any meals from the dining facility during the ORD–1 were using the dining facility after implementation of the new foodservice system (ORD–2).

b. **One Meal and Two Meals.** The percentage of customers consuming one and two meals decreased by 2.0% and 1.4%, respectively.

The decreases in both these meal categories were statistically significant. In comparison to the other meal categories these decreases are slight. However, in view of the significant decrease in the numbers not eating any meals, these customers may represent those who never ate in the facility during ORD–1.

c. **Three Meals.** The percentage of customers consuming three meals per day increased under the fast service system. The 4.7% increase was statistically significant.

d. **More Than Three Meals.** The ORD–2 evaluation observed that on the average 9.2% of SIK personnel consumed more than three meals compared to 0.5% during the ORD–1 evaluation resulting in a net change of 8.7%. Individuals in this category underwent a more rigorous analysis. This analysis indicated that initially customers consumed more than three meals due to the novelty of the system. However, as customers became familiar with the system, the percentage of customers consuming meals in this category decreased. Also determined from this analysis was the fact that customers in this category do not consume more than three meals per day on a regular basis. In fact, individuals in this category consumed an average of 2.3 meals per day during the ORD–2 period. This data indicates that while some customers on occasion consume more than three meals in one day, over an extended period no one consistently consumed more than three meals per day.

KP Contract Cost Savings

The modular fast service facility resulted in KP contract cost savings. At Fort Ord, the KP contractor was on a time and materials contract at a rate of $0.69 per person per meal for those meals served in the dining facility. With the introduction of the modular facility, there was a reduction in the number of persons served in the dining facility.

The contract negotiated for the modular unit is based upon a performance of specifications contract. KP's perform their duties in the modular facility for $99.69 per day.

With a total KP cost of $99.69 per day, it is apparent that a potential for savings exists (Table 15). During the two week evaluation period in September 1981, an average of 735 customers were served per day in the modular facility (445 not including extended hour service).

If these customers had eaten in the dining facility, a KP cost of almost $510 would have been incurred. Therefore, the net savings realized per day attributable to the modular facility was about $410. On a monthly basis, the total KP cost savings could be approximately $12,000.

Table 15

KP Contract Cost Savings

Dining Facility KP Cost @ $0.69/person*	$507.15
Less: Modular Facility KP Fixed Cost of $99.69	99.69
Net Savings from Modular Facility Per Day	407.46
Less: Disposable Costs Per Day @ $0.126/person	92.61
Daily Net Savings After Disposable Costs	314.85
Monthly Net Savings from Modular Facility	$12223.80
Monthly Net Savings After Disposable Costs	$ 9445.50

*The KP contract cost if the average daily modular attendance of 735 had eaten in the dining facility. Additional KP cost savings could be generated if breakfasts were served from the modular facility.

Thus, savings resulting from the modular facility could be used to defray consumable expenses. Assuming the most expensive packaging option of $0.126 per person, the net savings attributable to the modular after total packaging costs have been expended would be about $315 per day. Additional KP contract savings could be generated if breakfasts were also served from the modular facility.

Customer Evaluations

Data collection support was carried out in two phases by Behavioral Sciences Division personnel from the Science and Advanced Technology Laboratory (SATL). The first phase of data collection (ORD–1) occurred before installation of the modular facility, popularly named the "Muzzle Break," and consisted of questionnaires and brief face-to-face interviews. The second phase (ORD–2) was carried out after the modular facility had been operational for approximately a month and similarly consisted of questionnaires and face-to-face interviews.

Food acceptance interviews were conducted both in the dining hall and outside the modular facility during meal hours. In the dining facility, the interviewer would approach diners who were close to finishing or who had already finished eating and ask their permission to be

interviewed. The interviewer then asked the diner to rate each food item and the overall meal using a standard hedonic food acceptability scale. The hedonic scale used in both the dining facility and at the modular facility had nine points ranging from 1 (dislike extremely) to 9 (like extremely).

Customers at the modular facility were interviewed in line or immediately after they had picked up their meal. The interviewer approached the customer and asked first to recall and then to rate on the nine-point hedonic scale each food item included in his or her most recent meal from the modular facility. Their responses were recorded on the take-out food rating card (Figure 3).

We need your opinion of the take-out food at Fort Ord. Please list on the lines below the names of all the foods you had for THIS meal. When you have finished eating, please CIRCLE the number which describes how you liked each food. The scale goes from 1 for Dislike Extremely to 9 for Like Extremely. As soon as you can, please put the card in the box marked FOOD RATING CARDS which is located in your Unit Orderly Room. Thanks for your help.

Write In Food Names	Dislike Extremely	Dislike Very Much	Dislike Moderately	Dislike Slightly	Neither Dislike Nor Like	Like Slightly	Like Moderately	Like Very Much	Like Extremely
_____	1	2	3	4	5	6	7	8	9
_____	1	2	3	4	5	6	7	8	9
_____	1	2	3	4	5	6	7	8	9
_____	1	2	3	4	5	6	7	8	9
_____	1	2	3	4	5	6	7	8	9
_____	1	2	3	4	5	6	7	8	9

Comments:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Figure 3. Take-Out Food Rating Card

Both customer questionnaires and face-to-face interviews were designed to gather information concerning satisfaction with various aspects of Army life and the foodservice system in particular.

Analyses of the data collected allowed ORD–1 and ORD–2 samples to be compared with each other as well as with other military foodservice systems. At ORD–1, attention was directed toward attitudes about the dining facility and meal hours. Each customer was also asked to state the choice of food items that he/she would like on a take-out menu. ORD–2 used the same basic questions and included specific questions relevant to the modular facility meal. In this manner, the impact on customer satisfaction with the overall food system could be evaluated.

ORD–1 and ORD–2 interviews sought specific opinions about the overall foodservice system so as to provide a basis to evaluate any change in satisfaction with introduction of the modular facility.

a. **Overall Customer Opinion.** Questionnaire data concerning nine aspects of Army life indicates that between ORD–1 and ORD–2 there are similar degrees of satisfaction as indicated by mean ratings and rankings (Table 16). Food has consistently been ranked as one of the least satisfying aspects of the Army. Pay (ORD–1 and ORD–2) was ranked lower. However, the mean acceptability level of food **increased** between ORD–1 and ORD–2.

Table 16

Fort Ord Customer Satisfaction With General Aspects of the Army

Rank*	ORD–1	Mean	ORD–2	Mean
1.	Friends	5.5	Friends	5.0
2.	Barracks	5.4	Barracks	5.0
3.	Benefits	4.7	Benefits	4.8
4.	Travel	4.6	Travel	4.7
5.	Training	4.3	Training	4.3
6.	Discipline	3.9	Discipline	4.1
7.	Job	3.8	Job	4.1
8.	Food	3.2	Food	3.7
9.	Pay	2.9	Pay	3.3

Scale:
7 Very satisfied
6 Somewhat satisfied
5 Slightly satisfied
4 Neither satisfied nor dissatisfied
3 Slightly dissatisfied
2 Somewhat dissatisfied
1 Very dissatisfied

*Reflects rank ordering of factors based on mean scores.

Another area of improvement was in the customers' opinion of the overall quality of the foodservice. On a seven-point hedonic scale where four is neutral, the average rating of the overall quality at ORD–1 of 3.4 was slightly on the low side but improved to 4.1 at ORD–2 ($t = 3.98$). There are indications that the acceptance of the modular facility is responsible for at least some of this improvement. When interviewees were asked "What do you like about the Fort Ord foodservice?", disregarding a "nothing" response to the question, the "Muzzle Break" was the most frequent response (Table 17).

b. Customers Opinion of the Fast Service Facility. Of the 75 customers interviewed and asked whether the modular facility had made the overall food system better or worse, 84% thought the system better, 8% thought it worse, 3% neither better nor worse, and 5% did not answer. The convenience, faster service, and resultant shorter lines were described as reasons for the system being better. The hours of operation of the modular facility (ORD–2) provided more convenience thus more satisfaction than those of the dining hall at either ORD–1 or ORD–2 (Table 18). A significantly greater number of customers responded that the modular facility hours, which had been extended to later in the evening, were "OK the way it is" (77%) than responded that the dining hall hours were OK (41%) (X^2 (1) = 11.47, $p<0.01$). A smaller number wanted the modular facility to either open earlier (7%) or to stay open later (15%) ($Z = 2.14$, $p < 0.05$). These results, shown in Table 18, indicate that if changes in the operational hours are anticipated, then staying open later would offer more customer satisfaction than opening earlier. Poor food quality and poor service quality were cited by those stating that the system was worse (8%). The "neither" respondents (3%) stated that in spite of the obvious improvements, the food quality was still poor.

Analysis of customer satisfaction ratings of various modular facility features, listed in Table 19, indicates that the facility was acceptable. Variety of menu choices was the most negative feature. Quantity of food was seen as "about right".

Food acceptance data were collected by three methods: recall interviews outside the modular facility, dining hall interviews during meals, and anonymous surveys. Items that were similar and were common to the three food acceptance data collection methods are listed in Table 20. Note that some of these ratings were based on fewer than ten observations and may not be representative. Fried chicken was rated highest by customers both at the modular facility (6.16) and the dining facility. While some variability in the food acceptance ratings is noted, in general the foods evaluated received similar ratings across all three methods. Burritos (3.97) were the least acceptable item and have been deleted from the menu until a more acceptable item can be purchased.

Of the 112 ORD–1 customers interviewed, over half (60%) predicted that they would eat daily at a new take-out facility, 38% predicted usage several times per week and 2% said they would use the facility only once a week.

ORD–2 interview results indicate that of the 75 respondents, 67% ate at least one weekday lunch and 75% ate at least one weekday dinner at the modular facility. Eighty-eight percent, however, spent at least one weekend in each month away from the post.

Table 17

ORD–1 and 2 Comparisons of the Open-Ended Interview Questions
On the Overall Foodservice System

Specifically, what do you like about the current foodservice?

Response	ORD–1		Response	ORD–2	
	N=112*			N=75*	
Food quality	36	(33)%	Nothing	16	(28)%
Atmosphere	26	(24)%	The Muzzle Break	13	(23)%
Variety	25	(23)%	Dining areas	9	(16)%
Nothing	21	(19)%	Lines move quickly	7	(12)%
			Service	6	(10)%
			Food quality	6	(10)%

Specifically, what do you NOT like about the current foodservice?

Response	ORD–1		Response	ORD–2	
	N=112*			N=75*	
Food quality	61	(30)%	Food quality	35	(38)%
Cooks attitude	47	(22)%	Nothing	15	(16)%
Lines	39	(19)%	Food quantity	14	(15)%
Food quantity	36	(17)%	Cooks attitude	9	(10)%
Food monotony	24	(12)%	Food monotony	6	(7)%
			Mess hall hours	6	(7)%
			Service	6	(7)%

Specifically, what would you like to change about the current foodservice?

Response	ORD–1		Response	ORD–2	
	N=112*			N=75 *	
Longer hours	44	(40)%	Food quality	20	(24)%
Have more variety	27	(25)%	Hours	18	(22)%
Bigger portions	20	(18)%	Nothing	15	(18)%
Decrease lines	19	(17)%	Have more variety	14	(17)%
			Cooks attitude	10	(12)%
			More quantity	5	(6)%

*multiple responses

Table 18

Customers' Opinions of Operating Hours of Dining Facilities

How do you feel about the hours the dining facility is open?

	Dining Hall		Fast Service Facility
	ORD–1 (n=112)	ORD–2 (n=168)	ORD–2 (n=168)
For Breakfast			
OK the way it is	43%	73%	–
Should open earlier	21%	5%	–
Should stay open later	36%	21%	–
For Noon Meal			
OK the way it is	42%	40%	68%
Should open earlier	33%	43%	18%
Should stay open later	25%	16%	13%
For Evening Meal			
OK the way it is	30%	41%	77%
Should open earlier	11%	10%	7%
Should stay open later	59%	47%	15%

Table 19

Customer Satisfaction of the Fast Service Facility

Please rate the Muzzle Break:

	Rating	Significance
Speed of Service	5.5[a]	t = 14.12*
Hours of Operation	5.3[a]	t = 12.14*
General Environment	5.0[a]	t = 10.12*
Quality of Service	4.3[a]	t = 2.12
Quality of Food	4.1[a]	t = 0.72
Variety of Food	3.2[a]	t = 6.30*
Quantity of Food	2.9[b]	

*Significant difference

Scale	[a]7 Point	[b]5 Point
	1 – Very Bad	1 – Far too little
	2 – Bad	2 – Too little
	3 – Slightly bad	3 – About right
	4 – Neither bad nor good	4 – Too much
	5 – Slightly good	5 – Far too much
	6 – Good	
	7 – Very good	

Table 20

Comparison of the 9-Point Food Acceptance Ratings

	Muzzle Break Recall Interviews[a]		Dining Hall Interviews[b]		Muzzle Break Survey[c]	
	N	X	N	X	N	X
Beverages						
Juice	25	7.64	52	7.59		
Regular Soda	71	7.19	77	7.04		
Milk	77	6.49	146	8.16		
Fruit Drink	39	6.39	41	7.00		
Entrees						
Fried Chicken	125	6.16	34	6.09	143	6.04
Burritos	2	8.00			94	3.97
			Ham	7	5.57	
			Steak	11	5.91	
			Salisbury Steak	8	6.12	
			Pork Chops	17	6.43	
Starches						
Rolls	46	6.56	14	5.50		
Potato Chips	190	4.79				
			French Fries	34	4.92	
			Pasta	19	5.68	
			Potatoes	63	6.00	
			Rice	15	5.27	
Salads						
Cole Slaw	83	4.50	Salad	43	5.58	
Sandwiches						
Fishwich	5	6.60			81	5.24
Chicken	13	5.76			105	5.79
Chili/Hot Dogs	16	5.43			76	5.05
Burgers	67	5.38	Burgers	31	6.22	144 5.24
Ham & Cheese	16	4.87			91	5.57
Roast Beef	7	3.71			84	5.10

Table 20

Comparison of the 9-Point Food Acceptance Ratings (cont'd)

	Muzzle Break Recall Interviews[a]		Dining Hall Interviews[b]		Muzzle Break Survey[c]	
	N	X	N	X	N	X
Sandwiches (cont'd)						
Grilled Ham & Cheese					93	5.53
Steak & Cheese					65	5.31
Pepper & Steak Sub					68	5.18
Salami & Cheese					73	4.56
Tuna Sub					68	4.56
Desserts						
Ice Cream	105	6.72	Ice Cream	10	2.60	
Pie/Dessert	52	6.03	Pie/Dessert	78	6.30	
Fruit	59	5.84	Fruit	17	7.70	
Cookies	8	5.37*				

SCALE: 1 – dislike extremely, 2 – dislike very much; 3 – dislike moderately; 4 – dislike slightly; 5 – neither dislike nor like; 6 – like slightly; 7 – like moderately; 8 – like very much; 9 – like extremely.

[a]Recall interviews (take-out food rating card)

[b]Face-to-face food acceptance interview

[c]Anonymous survey question: "If you have eaten at the Muzzle Break, please rate the following, of those foods you have eaten".

*Based on fewer than 10 observations.

Increased participation rates for the overall foodservice system in conjunction with the large numbers of troops selecting the fast service facility corroborate these findings. It is particularly interesting to note that a significant number of customers are not on post on weekends. Ordinarily, this absence of patrons would have a significantly negative impact on participation rates. However, the extended hour meal service especially on Sunday evenings, allows enlisted personnel to obtain a meal they would otherwise miss if only regular meal hours existed. During ORD–2, a 46.9% meal participation rate was achieved on weekends compared to the ORD–1 period when only a 35.1% meal participation rate was measured. The fast service system has increased customer satisfaction and obtained a 33.6% relative improvement in weekend attendance.

Conclusions and Recommendations

Results of this evaluation lead clearly to the conclusion that the modular fast service facility significantly increased both enlisted participation rates and satisfaction with foodservice. Meal participation rates by enlisted personnel were significantly increased to an overall percentage of 58%. This increase represented a 38% relative improvement over the 42% meal participation rate exhibited in the pre-test. Waiting lines at the dining facility were dramatically reduced as 75% of lunch and 60% of dinner customers opted to eat at the fast service facility. Customer service rates at the modular facility, which are 60% higher than the dining facility, reduced the waiting time in line by patrons. After implementation of the fast service concept, customer satisfaction increased. Eighty-four percent of all customers surveyed stated that the modular fast service facility improved the total foodservice system.

The modular fast service facility is a viable alternative to the regular short order service provided within Army enlisted dining facilities. However, when comparisons between the Fort Ord modular facility approach and the modification of the Fort Devens short order line approach to providing fast service are made, the most cost-effective option is to renovate existing dining facilities. We recommend however, that the modular facility be given due consideration for those areas where significant concentrations of personnel are present with limited or no foodservice available. For example, airfields and other remote work sites often have no foodservice capabilities, which then requires that personnel be supported from main post facilities or be allowed to leave the area. Customer satisfaction is generally poor, and Commanders do not care to have their personnel away from the work center for long periods. Therefore, in these cases, a modular fast service facility would be a logical and cost-effective method of providing high quality foodservice with a minimum investment.

To summarize, based upon the results obtained at both Fort Ord and Fort Devens, we recommend that:

- the fast service concept be incorporated into the Army foodservice program with the following essential features:
  - limited choice, high preference menus
  - pre-packaged food items and progressive cookery

— take-out service

— extended hours of operation

- materials be developed to gain command support for the new fast service concept where initial resistance is based solely upon preconceived negative associations with fast food.

- a fast service procedure manual be developed for use by installations.

- QM courses be modified to include training in the fast service concept and procedures in both basic and management foodservice areas of study.

APPENDIX A

SUPPLEMENTAL KP CONTRACT FOR THE MODULAR FAST SERVICE FACILITY

APPENDIX A

SUPPLEMENTAL KP CONTRACT FOR THE MODULAR FAST SERVICE FACILITY

DESCRIPTION/SPECIFICATION

1. Specifications performance required for the Modular Fast Service Facility. The contractual services required for this facility are listed below. This list is not meant to provide all instructions pertaining to the accomplishment of each task. Details concerning each task listed are explained elsewhere and apply in every case. Only the frequency is changed. Items marked daily or weekly may require more frequent cleaning as indicated by the Food Service Sgt or representative. This facility is strictly for carry-out service.

(a) Clean all equipment located inside the facility including tops, shelves, sides, inside, doors, legs, backs, underneath, front, wheels (daily).

(b) Clean all work surface and shelves including tops, sides, legs, underneath, doors (daily).

(c) Clean windows inside and out including screens, ledges, casements (daily).

(d) Clean the solid door and screen door so as to be free of dirt, dust, grease, food stains, smudges and streaks (daily).

(e) Keep all garbage and trash segregated during feeding period.

(1) Remove all garbage and trash from the facility.

(2) Trash will be put in the dumpster.

(3) Edible garbage will be put in the edible garbage can located at the rear dock.

(f) Scrub floors, walls and ceilings (especially corners and under equipment) and leave clean and dry (daily).

(g) Clean hood, grease filters and fly fans housing thoroughly (daily).

(h) Clean storage closet floors, floor, ceiling and inside walls (daily).

(i) Clean sinks, hot water heater and empty grease trap (daily).

(j) Wash and store all food service serving, cooking, preparation utensils, pans and holders (daily).

(k) Police outside area including the grounds and access routes within 30 feet of facility as required.

(l) Scrub the outside of the building and paved or concrete area within 25 feet of the unit.

(m) Empty all outside trash cans, scrub them out to include lids and rearrange in proper locations (daily).

(n) Clean outside service ledges especially in cracks (daily).

(o) Resupply napkin holders and condiments as required.

(p) Replace burned out light bulbs as required.

(q) Clean light fixtures (inside and outside) to include the inside of globes or light covers (weekly).

(r) Stock all food items needed for daily feeding schedule and resupply as needed. All supplies needed for daily operation will be stored in the walk-in refrigerator located directly behind the modular.

(s) Contractor shall transport necessary supplies to and from the DivArty dining facility.

(t) Clean inside of walk-in refrigerator located outside of this facility (daily).

(u) Prebag napkins and condiments prior to schedule feeding period.

(v) Apportion salad into individual disposable containers as required.

2. The following pages are the list of equipment in the Modular Fast Service Facility.

c. By virtue of the above changes, the contract price is increased by____ for revised estimated total contract amount of_____.

Item List

No.	Item Description	Reference Table I	Reference Paragraph
1	Refrigerator, Reach-In	6	–
2	Fryers, Deep Fat	4	–
3	Griddle	–	3.4.7.4
4	Oven, Microwave Electric	3	–
5	Blower, Air Barrier	1	–
6	Cash Drawer w/Lock	–	3.4.7.18
7	Cabinet, Food Hot	–	3.4.7.2
8	Cabinet, Food Hot/Cold	–	3.4.7.3
9	Shelving	–	3.4.7.15
10	Hood Vent	–	3.4.7.6
11	Counter	–	3.4.7.11
12	Food Warmer	–	3.4.7.13
13	Freezer, Reach-In	–	3.4.7.17
14	Closet	–	3.4.4.1 – 3.5.9
15	Sink, 3 Compartment	–	3.4.7.16

Item List

No.	Item Description	Reference Table I	Reference Paragraph
16	Heater, Hot Water	–	3.4.7.5
17	Pans, Insert	–	3.4.7.22
18	Baskets	–	3.4.7.1
19	Grease Separator	–	3.4.7.8
20	Faucet, Mixing	–	3.4.7.14
21	Sink, Covers	2	–
22	Hot Water Booster	5	–
23	Steam Hot Dog	–	3.4.7.21
24	Waste Receptacle	–	3.4.7.19
25	Drains, Floor	–	3.4.7.12
26	Canopy	–	3.5.5
27	Locking Device for Caster Equipment	–	3.5.10

Modular Fast Service Facility Cleaning Checklist

_____ 1. Clean all equipment located inside the facility including tops, shelves, sides, interior, doors, legs, backs, underneath, front wheels (daily).

_____ 2. Clean all work surface and shelves including tops, sides, legs, underneath, doors (daily).

_____ 3. Clean windows inside and out including screens, ledges, casements (daily).

_____ 4. Clean the solid door and screen door so as to be free of dirt, dust, grease, food stains, smudges and streaks (daily).

_____ 5. Keep all garbage and trash segregated during each meal feeding period.

a. Remove all garbage and trash from the facility.

b. Trash will be put in the dumpster.

_____ 6. Edible garbage will be put in the edible garbage can located at the rear dock.

_____ 7. Scrub floors (especially corners and under equipment) and leave clean and dry (daily).

_____ 8. Clean hood, grease filters and fly fan housings thoroughly (daily).

_____ 9. Clean ceilings and inside walls (weekly).

_____ 10. Clean sinks, hot water heater exterior and empty and clean grease trap (daily).

_____ 11. Wash and store all food preparation, serving, cooking, utensils, pans and holders (daily).

_____ 12. Police outside area including the grounds and access routes within 30 feet of the unit (daily).

_____ 13. Wash the outside of the building and paved or concrete area within 25 feet of the unit (monthly).

_____ 14. Empty and scrub all outside trash cans to include lids and rearrange in proper locations (daily).

_____ 15. Clean outside service ledges especially in cracks (daily).

_____ 16. Resupply condiments as required.

_____ 17. Replace burned out light bulbs as required.

_____ 18. Clean internal/external light fixtures to include the inside of gloves or light covers (monthly).

_____ 19. Stock all food items needed for daily feeding schedule and resupply as needed. All supplies needed for daily operation will be stored in the walk-in refrigerator located directly behind the modular unit, or in the DivArty dining facility, Bldg. 3641.

_____ 20. Contractor shall transport necessary supplies to and from the modular facility.

_____ 21. Clean inside of walk-in refrigerators located to the rear of MFFF (daily).

_____ 22. Prebag napkins and condiments prior to scheduled feeding period.

_____ 23. Apportion salad into individual plastic containers as required.

_____ 24. Food contact surfaces will be cleaned and sanitized as defined in paragraphs 6–1c(8), 6–1c(17) and 6–4e, AR 40–5. Only disposable cloths will be used for cleaning purposes. The use of sponges is prohibited.

REMARKS:

APPENDIX B

EQUIPMENT SELECTION

APPENDIX B

EQUIPMENT SELECTION

The major pieces of equipment selected for use in the modular facility are the following:

Cabinet, Warming. This item is an insulated thermostatically controlled warming cabinet constructed of Hi-Tensile aluminum provided with universal interior lift out racks and a single door with positive latch and push-button opener. A one piece water reservoir with a perforated cover is situated above a removable heating element to provide wet heat. With overall dimensions of 27–1/2" (width), 33–1/2" (depth), and 69–3/4" (height), the warming cabinet holds 12 sheet pans at 4–1/2" intervals. Shelving is adjustable to 1–1/2" intervals. The electrical requirements for this warming cabinet are a 120-volt, 60-hertz, single phase system with a connect load of 2075 watts.

Cabinets, Food – Hot and Cold. Hot (upper) and cold (lower) food cabinets are two separate cabinets stacked one above the other. Both of these units are secured to each other by the use of a stacking kit which makes them a single unit. Fully insulated, these cabinets are equipped with lift-off doors, positive door latches, lift-out support racks and drop type handles located on the sides. Each cabinet is capable of holding eight standard size steamtable pans spaced at 2–3/4" intervals. The hot holding cabinet operates on a 120-volt, 60-hertz, single phase system with a connect load of 900 watts and is thermostatically controlled.

The cold food unit is equal in size to the hot cabinet and is cooled by use of a separate cold pack. Filled with a chemical refrigerant, the cold pack is then placed for 8 to 12 hours in a freezer. The charged cold pack is able to maintain a 40°F temperature for 3 to 4 hours in the cold food cabinet. Overall dimensions with both units stacked upon each other are 21–1/8" (width), 24–1/2" (depth), and 64–1/4" (height).

Food Warmer. A food warmer is located at the serving window. This unit provides a high concentration of heat without illumination. Dimensions of 31–1/2" (width), 23" (depth), and 20" (height) enable the warmer to hold two standard size steamtable pans or one sheet pan. Electrical requirements are 1500 watts, 120-volt, 60-hertz on a single-phase system.

Freezer, Upright. The upright, reach-in freezer is a self contained unit with a net capacity of 24.2 cu. ft. Exterior and interior surfaces are fabricated from 330 series stainless steel. The unit contains a full length door, exterior flush-mounted dial thermometer, and self contained refrigeration system. Overall dimensions for this unit are 29–7/8" (width), 35–5/16" (depth), and 83–1/4" (height). This freezer is designed to operate on a 120-volt, 60-hertz, single-phase system with a connected load of 700 watts.

Refrigerator, Upright. The upright, reach-in refrigerator is a two-section, self-contained unit with a net capacity of 68 cu. ft. It has 300 series stainless steel exterior and interior surfaces. The refrigeration system and controls are located on top of the unit and are readily accessible for servicing. The unit contains full length doors, an exterior flush mounted dial thermometer and heavy duty, chrome-plated, adjustable wire shelves supported by shelf studs.

This refrigeration system has an automatic defrosting system. A circulation system uniformly controls the food zone. The refrigerator unit is designed for operation on a 115-volt, 60-hertz, single-phase system. Overall dimensions are width 52–1/8", depth 34–15/16", and height 83–1/4" on 6" legs.

Deep-Fat, Fryer (Gas). These high production deep-fat fryers operate on natural gas. The production capacity of the deep-fat fryer is 75 lbs of frozen, french fried potatoes per hour at 350°F.

A bank of three fryers was provided in the modular unit. Each fryer is individually controlled with a separate thermostat and switches. These fryers are also provided with a deep cold zone that traps crumbs and food particles produced while cooking. The burners are of the jet tube variety, and do not require cleaning or adjusting. The input rating for this unit is 110,000 British Thermal Units (Btu) per hour and it is designed for operation on a 120-volt, 60-hertz, single-phase system. Overall dimensions of width 16", depth 28–2/8", and height 49–1/4".

Griddle. The griddle is designed for operation on natural gas. It is provided with two thermostats, a griddle plate, drain drawer and splash guards. This plated griddle is 3/4" thick, 45" wide, 30–1/8" deep and 17" high with an input of 160,000 Btu per hours.

Microwave Oven. The microwave oven is primarily used to reheat the beefburgers and hot food products prior to serving. Oven controls are located on the top front panel. The oven cavity dimensions are width 24", depth 14", and height 10". It is capable of heating one full-size nonmetallic, steamtable pan of a food product (12" x 20"). This unit is designed for electrical operation on a 208-volt, 60-hertz, single-phase (three wire), 30-amp system and has overall dimensions of width 28", depth 25", and height 24".

Sink, Three-Compartment. This 300 series stainless steel, three-compartment sink has two faucet holes located in the center of the sink. Each sink compartment dimensions are width 18", length 16", and depth 14". The unit is also designed with an 8" backsplash. Overall front-to-back dimensions are width 18", length 48", and working height 34".

Portable, Walk-In Type, Refrigeration Box. Located outside of and at the rear of the modular unit were two, 150 cu. ft. capacity, portable, walk-in type refrigeration boxes. One was utilized as a refrigerator, the other as a freezer. These walk-ins were operated by separate refrigeration units which operated on a 230-volt, 60-hertz, three-phase system. The overall dimensions for the walk-ins are 76–5/8" wide, 101" deep, and 71–1/4" high.

APPENDIX C

EQUIPMENT RECOMMENDATIONS

APPENDIX C

EQUIPMENT RECOMMENDATIONS

Prior to purchase of other similar modular facilities, the following observations should be incorporated into purchase descriptions from both an operational and safety standpoint. Table C–1 summarizes purchase description deficiencies that were found when the modular facility arrived at Fort Ord.

If foodservice equipment is to be fueled by gas, then each piece of equipment should have individual gas shut-off valves. In addition, gas lines should be encased and should not be of the flexible hose variety that were observed at Fort Ord. Ventilation of gas lines that run beneath the modular facility is necessary to prevent a gas build-up in the case of a ruptured line. No provision had been made for any vents. However, we were able to provide ventilation by drilling holes beneath the modular base and covering them with screening to prevent insects and rodents from entering.

Another feature that requires correction pertains to utility connections beneath the modular facility. Currently, access to utility lines will require removal of quarry tile and flooring. This type of repair would be both time consuming and costly. Provision at the very least for a crawl space would eliminate this problem.

Entry and exit from the facility would be facilitated if a swinging door assembly was added instead of the existing door. Workers entering the facility cannot open the door easily if they are carrying anything, therefore they "kick" open the door. The result of opening the door in this manner is the possibility of a worker falling as well as a damaged door.

External clean-up of the modular facility would be eased by the installation of an exterior faucet and hose. Cleaning of walls and food spills is currently a tedious and time consuming chore.

By providing a serving rail with cutouts that could hold standard 4" or 6" inserts that would be filled with condiments, customer service would be improved. Placing of condiments in the take-out paper bag would not be required as customers could choose their own. Refilling would be simple as the server would only have to open the main window, and replace the empty insert with a full insert.

A final recommendation concerns the deep-fat fryer operation. As at Fort Devens, filtering of deep-fat fryers is essential. To facilitate and make safer the filtering function, the type of deep-fat fryer system with built-in filtration system should replace the current deep fat fryers. Utilization of this system will enable the cooks to more easily operate and clean equipment. Further, the self-filtering aspect will make filtering a safer and more efficient procedure. The current filtering system is effective but the cooks do not like to work with hot frying compound or change the filters as required. The recommended equipment should alleviate these problems.

Table C–1

Contract Specification Deficiencies

Paragraph	Description	Defect	Classification Major	Classification Minor	DFAE Response to Deficiency
3.4.5.1	ceramic floortile	quarry tile, not sealed	x		clean and seal, replace base
3.4.5.2	ceramic tile, cove base	rubber cove, not sealed	x		replace cove, radius corner
3.4.7.2	cabinets food hot	jammed between sink and reefer		x	free and re-position
3.4.7.3	cabinets food hot/cold	not hinged left, (leftside)	x		obtain door
3.4.7.4	griddle	cutting board unstable, safety hazard	x		brace and secure
3.4.7.5	hot water heater	should not be resting on floor, sanitation def.	x		4" above floor and provide barrier
3.4.7.6	hood, vent	not in accordance with NFPA no. 96 main gas shut off not tied into extinguishing system	x		locate outside unit
3.4.7.10	air conditioner/heater	main gas line connection tied into condenser drain	x		repair and reconnect
3.4.7.12	floor drain	not as specified		x	inspect
3.4.7.14	faucet, soap dish	soap dish missing		x	obtain soap dish or wall-mounted dispenser
3.4.7.15	shelving	not as specified		x	lower shelving to a suitable work height COMMENT: current height of shelving is too high for ease of utilization
3.4.7.16	sink	not as specified, drains and overflow safety hazard	x		will be checked
3.4.7.17	freezer, reach-in	door not hinged left	x		change door
3.4.7.19	waste receptacles	missing		x	back ordered, copolymer board
3.4.7.20	sink, covers	not as specified	x		place on copolymer board on cover
3.4.7.22	pans, insert	36 inserts required, 12 inserts provided	x		back ordered
3.4.7.23	screen door	binding, does not close	x		repair

Table C–1 (cont'd)

Contract Specification Deficiencies

Paragraph	Description	Defect	Classification Major	Classification Minor	DFAE Response to Deficiency
3.5 Table I, Item 3	microwave oven	not as specified	x		to be replaced
3.5 Table I, Item 4	fryers, deep-fat	145K Btu specified 110K Btu provided, further spec. investigation required banking strips and flues missing	x		to be clarified
3.5.4.2	windows	a. not as specified 1. sizing incorrect 2. locations incorrect 3. not of push out type as specified 4. caulking missing at worktable to frame 5. caulking of window not trimmed	x		to be corrected
3.5.5	roof assembly	low areas in roof contribute to excessive water build-up	x		to be corrected
3.6.1	lighting	interior lighting not recessed exterior lighting, 5 lights vs 7 specified, 3 globes missing	x		modify lights to prevent dust collecting on top of unit
3.12	finish	a. areas not free of discoloration, rust b. painted surfaces peeling c. no paint in certain locations	x		correct problems
3.14	workmanship	not free of dirt, sharp edges and corners metal edging at ventilator discharge	x		to be corrected
3.14.3	fastening devices	threaded fasteners missing at screen door piano hinge rivet heads not in full contact with piano hinge surface	x		repair
	general	utilities require inspection by appropriate DFAE personnel prior to and at time of hook-up to determine conformance to procurement document (paragraph 3.10, operations)			inspection to be conducted

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